Section H
Noise

NOISE

Setting

Measuring Noise Levels

Most sound measurements are based on sound pressure levels at various frequency ranges, with results reported using decibel (dB) scale. The "A-weighted" decibel scale (dBA) is the most widely used frequency-weighting scale. The "C-weighted" decibel scale (dBC) is occasionally used for specialized purposes. In addition to frequency-weighting scales, there are several methods for averaging noise levels over various periods of time; equivalent noise levels (Leq), day-night average sound levels (Ldn), and community noise equivalent levels (CNEL) are three commonly used methods. Appendix K contains descriptions of the applications and derivations of dBA, dBC, Leq, Ldn, and CNEL. In this analysis, peak-hour Leq will be the unit of noise measurement most commonly used.

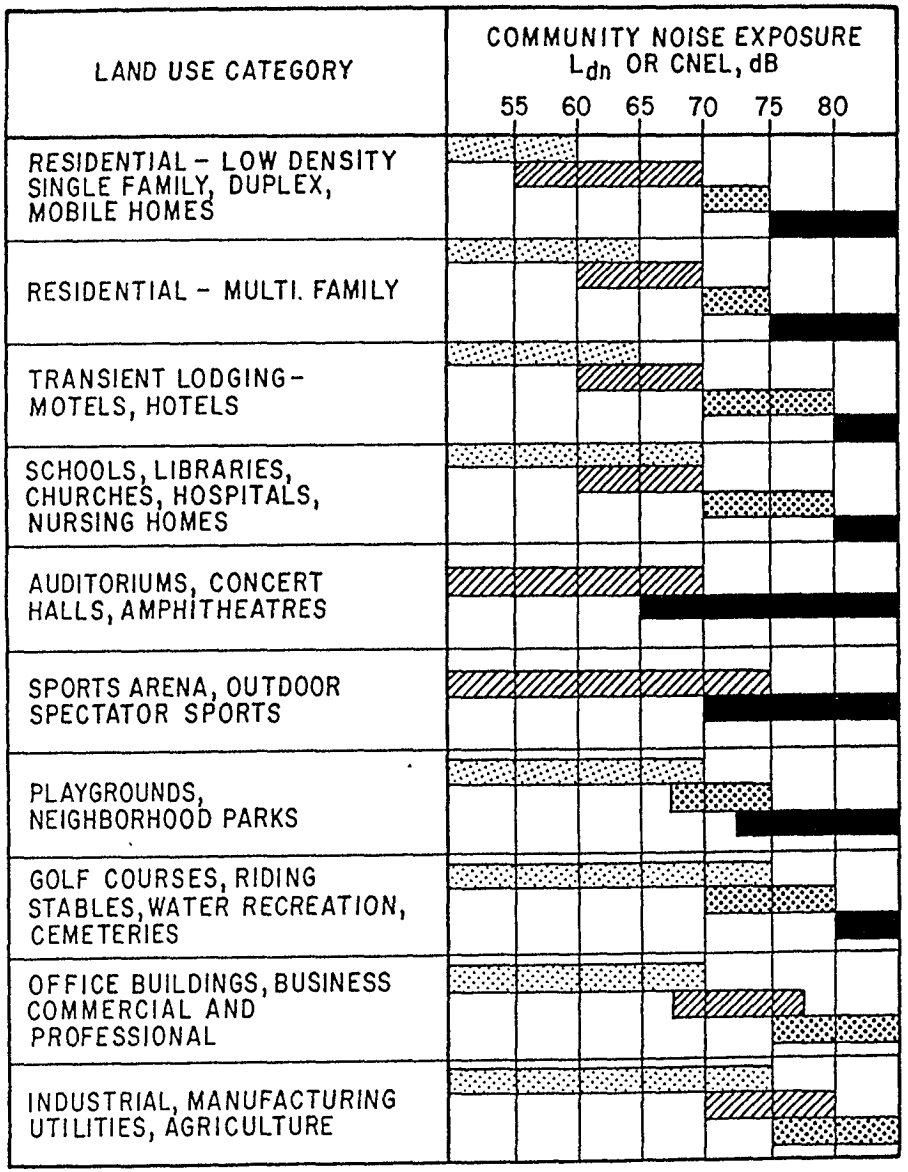
Guidelines for Interpreting Noise Levels

Various federal, state, and local agencies have developed guidelines for evaluating the compatibility of different land uses and various noise levels. State and local guidelines have been used in this EIR.

State Guidelines. The California Department of Health Services, Office of Noise Control, has published guidelines for the noise element of local general plans. These guidelines include a noise level/land use compatibility chart (Figure H-1). That chart categorizes various outdoor Ldn ranges into as many as four compatibility categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable), depending on land use. For many land uses, the chart shows overlapping Ldn ranges for two or more compatibility categories. These overlapping Ldn ranges indicate that local conditions (existing noise levels and community attitudes toward dominant noise sources) should be considered in evaluating land use compatibility at specific locations.

The normally acceptable range for low-density residential uses is identified as less than 60 dB, while the conditionally acceptable range is 55-70 dB. The normally acceptable range for high-density residential uses is identified as Ldn values below 65 dB, while the conditionally acceptable range is identified as 60-70 dB. For educational and medical facilities, Ldn values below 70 dB are considered normally acceptable, while Ldn values of 60-70 dB are considered conditionally acceptable. For office and commercial land uses, Ldn values below 70 dB are considered normally acceptable, while Ldn values of 67.5-77.5 are categorized as conditionally acceptable.

The California Department of Housing and Community Development has adopted noise insulation performance standards for new hotels, motels, and



INTERPRETATION

NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

FIGURE H-1. LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

Source: California Department of Health, Office of Noise Control 1976.

C-065368

dwellings other than detached single-family structures (California Administrative Code, Title 24, Division T25). These standards require that "interior community noise equivalent levels (CNEL) with windows closed, attributable to exterior sources, shall not exceed an annual CNEL of 45 dB in any habitable room."

Local Policies. The noise element of the City of Stockton General Plan incorporates the land use compatibility guidelines prepared by the California Department of Health Services (Figure H-1). Additionally, the City noise element applies the state noise insulation standards to all new residential construction, including single-family dwellings within areas subject to outdoor Ldn levels of 65 dB or more.

The land use compatibility guidelines (Figure H-1) will be used in this EIR to determine if noise levels are compatible with existing and proposed land uses and to determine the significance of noise impacts.

Existing Noise Conditions

Existing noise levels in the project vicinity are dominated by traffic on I-5 and surface arterial roadways. Based on current traffic volumes, peak-hour noise levels over most of the project site are probably 50-65 dBA. Peak-hour noise levels approximately 1,000 feet from I-5 are estimated in the range of 60-65 dBA. Higher noise levels occur closer to the freeway. Peak-hour noise levels are usually within 1-2 dB of daily Ldn values. Thus, the northeastern portion of the project site is exposed to relatively high traffic noise levels.

Existing land uses between the project site and I-5 are exposed to higher noise levels, with some locations probably experiencing peak-hour noise levels above 70 dBA. Such noise levels exceed the recommended land use compatibility standards in the noise element of the general plan. Noise levels are expected to increase slightly as currently approved development projects in the Stockton area are constructed.

Project Impacts and Mitigation Measures

The proposed project would contribute sources of noise to the project vicinity and expose new residents to existing noise sources. Construction activities would be a temporary noise source. The major long-term noise source would involve vehicle traffic related to the project.

Construction Noise

Impact: Exposure of Surrounding Land Uses to Construction-Related Noise

Construction equipment and activities can generate noise levels of 90-95 dBA at 50 feet from the equipment. Offsite noise levels during project construction will vary considerably, depending on the location of

construction activities and the types of equipment in use. Figure H-2 shows ranges of noise levels that can be expected from construction equipment. Construction noise levels up to 80 dBA near the project boundaries can be expected.

The generation of construction-related noise would be temporary. However, because of the magnitude of construction-related noise levels and the proximity of existing residential land uses north and east of the project site, the construction-related noise is considered a significant adverse impact. The following mitigation measure would reduce the impact to a less-than-significant level.

Mitigation Measures

- The use of construction equipment powered by internal combustion engines, the use of impact equipment, or other construction activity that would result in disturbance of nearby residential areas should be limited to the period between 7:00 a.m. and 7:00 p.m. This restriction would limit disturbance of residential areas to less sensitive periods of the day.

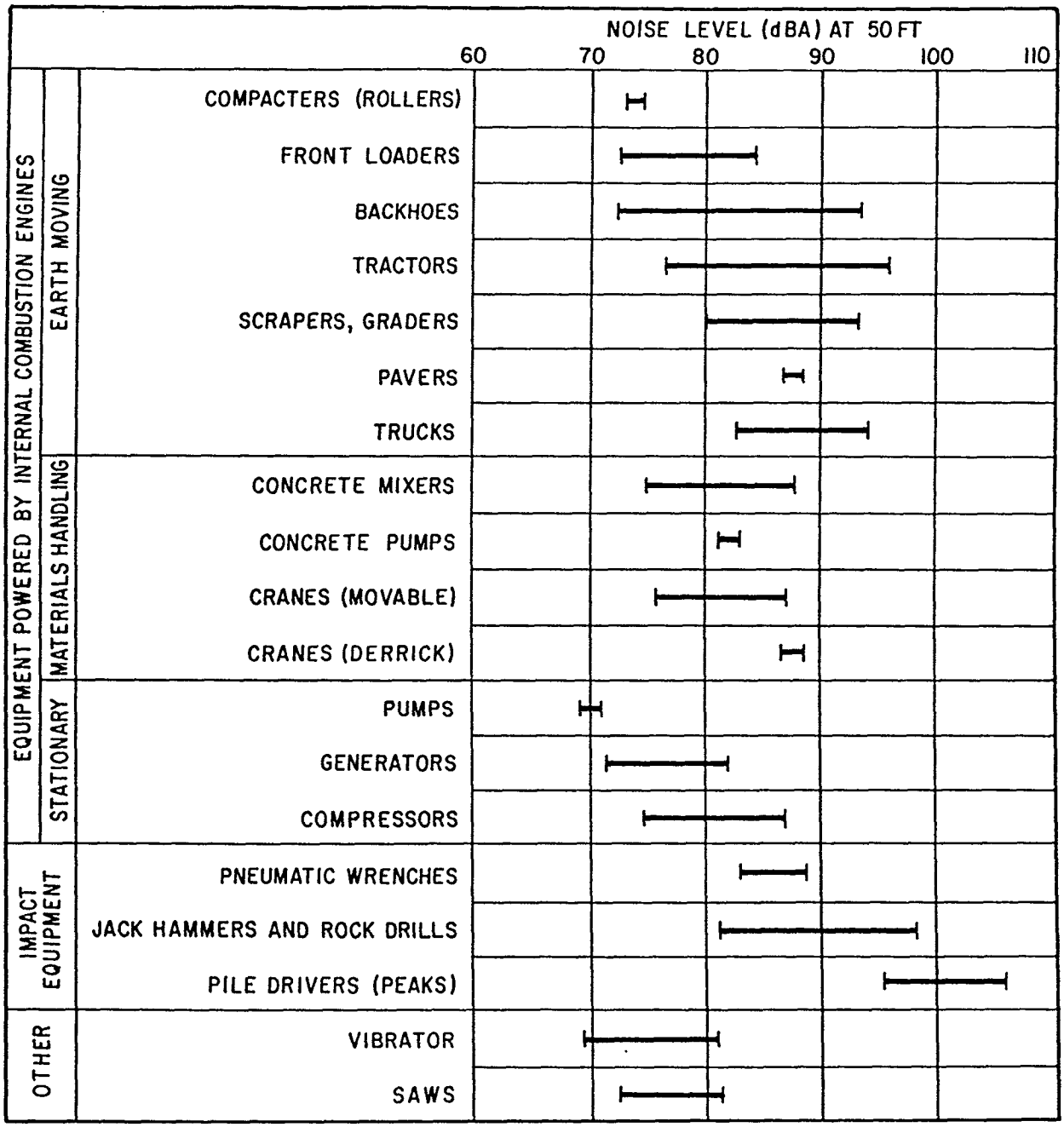
Traffic Noise

Traffic noise conditions have been evaluated using the Federal Highways Administration (FHWA) STAMINA 2.0 traffic noise modeling package (Bolwby et al. 1982, Barry and Reagan 1978). This modeling package was used to calculate afternoon peak-hour Leq values (as opposed to daily CNEL conditions). It is not unusual for the daily Ldn value to equal or exceed the afternoon peak-hour Leq value.

Traffic data were taken from Section F, "Transportation," of this EIR. The following development conditions were analyzed:

- existing conditions,
- existing plus approved development without Brookside,
- existing plus approved development with Brookside,
- cumulative development without Brookside, and
- cumulative development with Brookside.

Peak-hour traffic volumes for different highway segments were used. The STAMINA 2.0 noise model is sensitive to assumptions about vehicle speeds and the amount of truck traffic. Vehicle speeds were assigned based on V/C ratios. The STAMINA model sets a minimum speed of 35 mph. Heavy-duty truck percentages were set in the range of 2-16 percent, depending on the roadway. A noise drop-off rate of 4.5 dB per doubling of distance was used for at-grade roadway segments, with a 3-dB drop-off rate used for elevated segments.



Note: Based on Limited Available Data Samples

FIGURE H-2. CONSTRUCTION EQUIPMENT NOISE RANGES

Source: Bolt, Beranek, and Newman 1971.

C-065371

This EIR focuses on those roadways that have a high average vehicle speed, have relatively high traffic volumes, and are most affected by project-related traffic. The STAMINA noise prediction model was used to analyze the following roadways:

- o I-5,
- o March Lane,
- o Feather River Drive, and
- o Brookside Road.

Noise predictions were made for locations that may be affected by traffic entering or leaving the project site. The receptor locations and the roadway network used in the noise analysis are shown in Figure H-3. Most of the modeled receptor locations are between I-5 and the eastern boundary of the project site.

Table H-1 summarizes peak-hour traffic noise levels for the five development scenarios analyzed. Traffic noise from I-5 dominates the noise conditions at all of the modeled receptor sites. Because traffic noise is more sensitive to traffic speed than to traffic volume, there are few significant differences in noise levels among the five development scenarios.

Impact: Changes in Noise Levels at Offsite Locations

As shown in Table H-1, the proposed project would result in minor increases in noise levels in the project vicinity. The greatest noise level increase (1.8 dB) is expected to occur in the vicinity of the intersection of March Lane and Feather River Drive. This increase (a 13-percent increase in perceived loudness) would not be discernible to many people. Noise increases at other locations are also expected to be minor (generally less than 1 dB). Some locations may actually experience small reductions in noise levels because speed reductions due to increased traffic congestion will offset the effect of increased traffic volumes.

Although the numerical increases in noise levels at offsite locations would be minor, most of these locations already exceed the City's 60-dB Ldn "normally acceptable" noise compatibility standard for residential areas. Some of these areas appear to be exposed to Ldn levels above 70 dB; such noise levels are "normally unacceptable" for residential use. Thus, the project would contribute to a continuation of an existing noise problem. As a result, this impact is considered to be potentially significant.

Mitigation Measures

- o To mitigate this potentially significant impact to a less-than-significant level, the City and/or other local, state, or federal agencies should construct a sound barrier along I-5 to reduce the noise impacts on adjacent residential land uses. The sound wall could be financed by fees assessed from developers, contributions

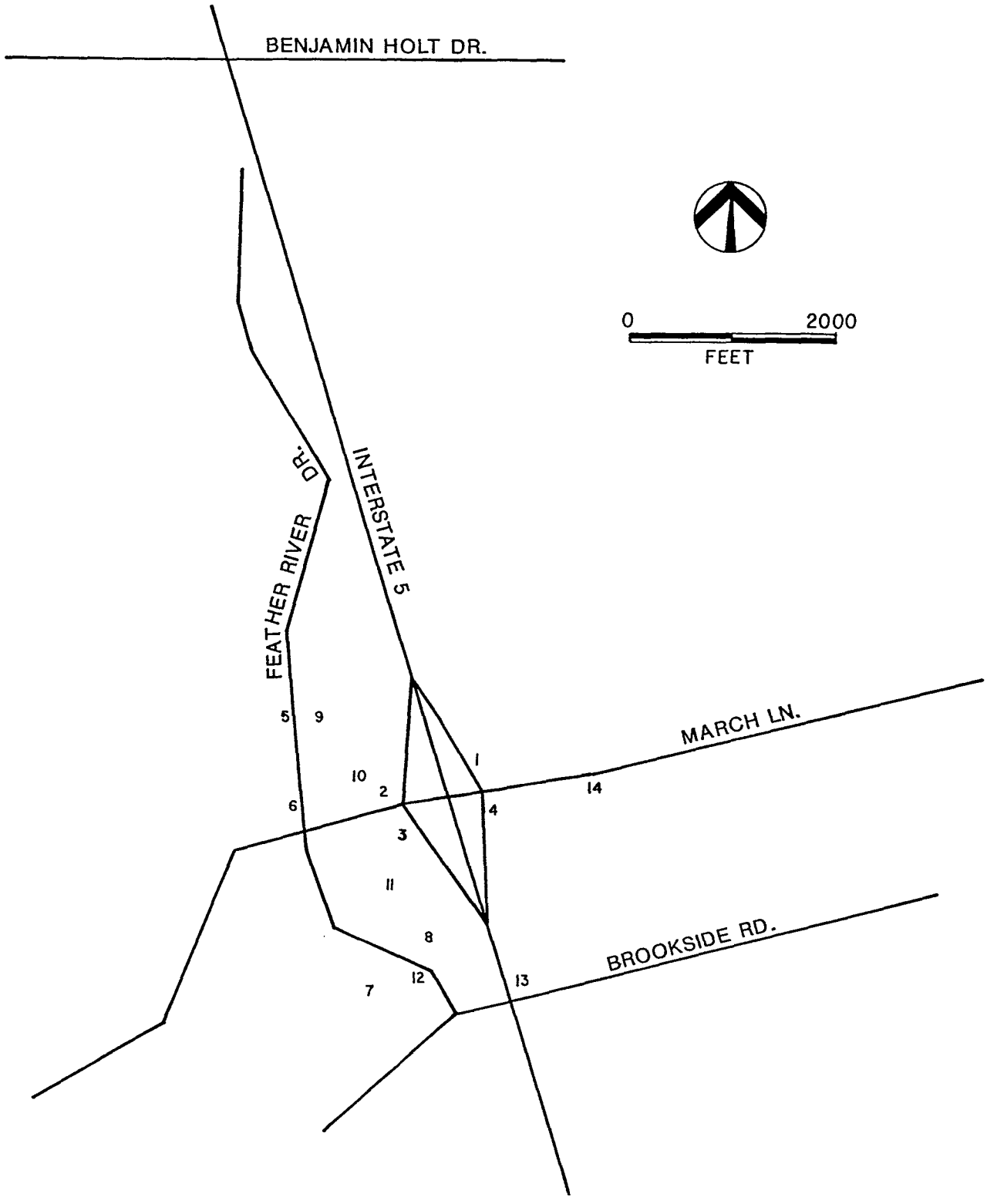


FIGURE H-3. ROADWAY NETWORK AND RECEPTOR LOCATIONS USED IN NOISE ANALYSIS

C-065373

C-065373

Table H-1. Existing and Projected Peak Hour Traffic Noise Near the Project Site

Receptor Locations	Peak Hour Leq					Decibel Change		Percent Change in Loudness	
	Scenario 1: Existing Conditions	Scenario 2: Existing Plus Approved Development	Scenario 3: Existing Plus Approved Development Plus Brookside	Scenario 4: Cumulative Development Without Brookside	Scenario 5: Cumulative Development With Brookside	Scenario 3 vs Scenario 2	Scenario 5 vs Scenario 4	Scenario 3 vs Scenario 2	Scenario 5 vs Scenario 4
1. Northeast of I5 and March Lane	71.5	71.8	71.6	71.8	71.5	-0.2	-0.3	-1.4%	-2.1%
2. Northwest of I5 and March Lane	68.8	69.1	69.3	69.0	69.1	0.2	0.1	1.4%	0.7%
3. Southeast of I5 and March Lane	69.8	70.0	70.1	70.0	69.7	0.1	-0.3	0.7%	-2.1%
4. Southwest of I5 and March Lane	72.0	72.2	72.3	72.2	72.2	0.1	0.0	0.7%	0.0%
5. Northwest of March Lane and Feather River Dr.	63.2	63.5	64.1	63.5	64.1	0.6	0.6	4.2%	4.2%
6. Northwest of March Lane and Feather River Dr.	64.4	64.6	66.4	64.7	66.5	1.8	1.8	13.3%	13.3%
7. Northwest of Brookside Rd and Feather River Dr.	62.0	62.2	62.2	62.2	62.0	0.0	-0.2	0.0%	-1.4%
8. Northeast of Brookside Rd and Feather River Dr.	69.0	69.2	69.0	69.2	68.8	-0.2	-0.4	-1.4%	-2.7%
9. Northeast of March Lane and Feather River Dr.	64.2	64.6	64.5	64.5	64.4	-0.1	-0.1	-0.7%	-0.7%
10. Northwest of I5 and March Lane	66.9	67.1	67.1	67.1	66.9	0.0	-0.2	0.0%	-1.4%
11. Southeast of I5 and March Lane	66.7	66.9	66.8	66.9	66.5	-0.1	-0.4	-0.7%	-2.7%
12. Northwest of Brookside Rd and Feather River Dr.	65.7	65.9	66.6	65.9	66.4	0.7	0.5	5.0%	3.5%
13. Northeast of Brookside Rd and I5	72.3	72.6	72.4	72.5	72.2	-0.2	-0.3	-1.4%	-2.1%
14. Southwest of March Lane and Da Vinci Dr.	66.3	66.8	67.8	66.6	68.0	1.0	1.4	7.2%	10.2%

Note: Receptor locations are shown in Figure H-3.

C-065374

by the City, and support from other county, state, and federal agencies. Because the noise problem is an existing situation, this mitigation measure would most appropriately be the responsibility of the City of Stockton and/or the local, state, and federal agencies rather than the project applicant. The portion of I-5 evaluated in this study extends north and south of March Lane and is elevated. Typically, noise barriers along a Caltrans facility are placed along the right-of-way line and are more than 30 feet from the edge of the nearest travel lane (Jelinek pers. comm.). However, because I-5 is elevated, a sound wall placed along the right-of-way line would not provide adequate noise reduction. It is feasible to locate a noise barrier directly on the shoulder of I-5. A sound barrier on the shoulder of I-5 would be on Caltrans property, would have to be maintained by Caltrans, and would require a rear service road at the base of the fill. Encroachment permits or cooperative agreements would be needed. The sound wall would have to meet Caltrans guidelines and would require FHWA approval (Jelinek pers. comm.).

Impact: Exposure of Project Residents to Traffic Noise

The noise modeling data in Table H-1 indicate that noise levels on most of the project site will remain within the "normally acceptable" Ldn standard of 60 dB for residential use. Residents of the northeastern portion of the project site, however, may be exposed to Ldn levels above 60 dB. The expected noise levels at the project site represent a potentially significant impact. The following mitigation measures would reduce this impact to a less-than-significant level.

Mitigation Measures

- o The developer should contribute funds to construct a noise barrier on the shoulder of I-5. This barrier is discussed above.

- o The developer should have an acoustical analysis prepared for all proposed residential units within 1,200 feet of I-5. The acoustical analysis should consider the building and site design features that could reduce interior noise levels:

  - minimizing the extent of windows and sliding doors facing the SPRR line,

  - installing extra wall and ceiling insulation,

  - using double glazing for windows and sliding doors,

  - installing airtight seals between window and door frames and exterior walls, and

  - adapting building design and orientation to minimize exposure of windows and sliding doors to railroad noise. Bedrooms and other

noise-sensitive areas of dwellings should be shielded from exterior noise sources by other portions of the dwelling.

Cumulative Impacts and Mitigation Measures

Impact: Increases in Traffic Noise

As is evident from Table H-1, traffic noise levels in the project vicinity will increase only slightly under cumulative development conditions. As a practical matter, traffic noise conditions would be essentially the same as those indicated under the preceding impact discussions. Cumulative development conditions would not significantly alter the project's incremental contribution to overall traffic noise impacts. This impact is considered less than significant.

Mitigation Measures. None required.

C-065376